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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/074,349

02/11/2002

Mark D. Rowan

P 1030.11004

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7590

06/23/2004

Garth Janke
BIRDWELL, JANKE & DURANDO, PLC
Suite 1400
1100 SW Sixth Avenue
Portland, OR 97204

EXAMINER

KINDER, DARRELL D

ART UNIT

PAPER NUMBER

2862

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/074,349

Applicant(s)

ROWAN, MARK D.

Examiner

Darrell Kinder

Art Unit

2862

AK

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 is/are allowed.
- 6) ☒ Claim(s) 12-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 14 is objected to because of the following informalities: claim 14 lines 10-11, "the normalized said signal characteristic" lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent no. 5,642,050 ("Shoemaker").

Regarding claim 12, Shoemaker discloses a method for correlating one or more of a metal detector's response signals to reference data that relates a plurality of metal targets to selected signal characteristics, the method comprising the steps of: interrogating the metal target with an electromagnetic interrogating signal at a first frequency to obtain a corresponding response signal (col. 3 lines 3-5); identifying in said response signal a signal characteristic (col. 3 lines 7-11, wherein the signal characteristic is the background excluded component) corresponding to the selected signal characteristic; normalizing the identified said signal characteristic for comparison with the corresponding selected signal characteristic of said reference data (col. 10 lines 29-34, 55-57, 64-66); and comparing the normalized said signal characteristic with the

corresponding signal characteristic of said reference data to identify the metal target (col. 10 line 66 - col. 11 line 12; col. 11 lines 36-43).

3. Referring to claim 13, Shoemaker discloses a method wherein said signal characteristic is a phase delay between the interrogating signal and said response signal (using phase detectors col. 4 lines 34-40, as the background excluded component can be determined using the phase delay, col. 3 lines 7-28, directly related to the phase delay as output from the phase detectors).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoemaker in view of Weaver et al. U.S. Patent no. 5,786,696 ("Weaver").

Regarding claim 14, Shoemaker discloses an apparatus for correlating one or more of a metal detector's response signals to reference data that relate a plurality of

metal targets to a selected signal characteristic, comprising: a means for storing the reference data (col. 11 lines 41-43); an interrogating circuit (**Fig. 2** 44,52) adapted to interrogate a target with an electromagnetic interrogating signal at a frequency (col. 3 lines 3-5); a receiving circuit (54) adapted to receive a response signal corresponding to said interrogating signal (col. 4 lines 17-40); an identifying circuit (**Fig. 5** 100,104) for identifying in said response signal a signal characteristic corresponding to the selected signal characteristic (col. 3 lines 7-11, wherein the signal characteristic is the background excluded component); a comparing circuit (198) for consulting said storing means (186) and comparing the normalized said signal characteristic with the corresponding signal characteristic of said reference data to identify the metal target (col. 10 line 66 - col. 11 line 12; col. 11 lines 36-43).

Shoemaker does not explicitly disclose that the storing means is a look-up table. However, look-up tables are well-known in the art and provide simple, efficient means for storing data for comparison.

Furthermore, Weaver discloses a metal detector, which utilizes a look-up table (**Fig. 6**) for storing reference data for comparison with received data (col. 1 lines 62-67).

One of ordinary skill in the art would have looked to Weaver to modify Shoemaker, as they are analogous art. Furthermore, one of ordinary skill in the art would have been motivated to modify the apparatus of Shoemaker with the teaching of Weaver such that a look-up table was used as a storing means for storing data for comparison, as it is a well-known means of storing data for comparison, and it is further an efficient and simple way to correlate data with a reference.

5. Referring to claim 15, Shoemaker discloses an apparatus wherein the identified said signal characteristic is a phase delay between the interrogating signal and said response signal (using phase detectors col. 4 lines 34-40, as the background excluded component can be determined using the phase delay, col. 3 lines 7-28).

Allowable Subject Matter

6. Claims 1-11 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or fairly suggest a method or apparatus for distinguishing between metal objects comprising interrogating a target with at least two frequencies, receiving a respective electrical response for the at least two frequencies, and resolving the response signals into primarily resistive portions and then comparing the magnitudes of these primarily resistive portion signals with each other, such that resistive is being compared with resistive (in accordance with applicant's response dated 9 April 2004, page 10 lines 1-3), in combination with the rest of the elements of the claims.

Response to Arguments

7. Applicant's arguments, see Remarks filed 9 April 2004, with respect to claims 1-11 have been fully considered and are persuasive. The rejections of claims 1-11 have been withdrawn. However, applicant's arguments with respect to claims 12-13 have been fully considered but they are not persuasive.

In response to applicant's arguments with respect to claims 12-13, the rejections have been clarified to some extent. Shoemaker identifies a signal characteristic, which

is the background excluded component (col. 3 lines 7-11), which can be determined from the phase delay between the interrogating signal and the response signal (col. 3 lines 7-28). This signal characteristic is then normalized for comparison (col. 10 lines 55-57), and then compared to reference data to identify a target (col. 10 line 66 - col. 11 line 1). Some of the elements involved therein are further illustrated in **Figure 5**. The claims, when given the broadest interpretation, fail to distinguish themselves from the broadest interpretation of the method and apparatus described in Shoemaker, and thus are not patentable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darrell Kinder whose telephone number is 571- 272-2264. The examiner can normally be reached on Monday-Friday 7:00-4:30, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on 571-272-2233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2862

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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DK


JAY PATIDAR
PRIMARY EXAMINER